KUTUZKINA, Ye.F.

The genus Loranthus in Sarmatian deposits of the Northern Caucasus. Paleont. zhur. no.4:139-141 '60. (MIRA 14:1)

1. Botanicheskiy institut imeni V.L. Komarova, Akademii nauk SSSR.
(Armavir region—Mistletoe, Fossil)

KUTUZKINA, Ye.F.

Sarmatian flora of Armavir. Trudy Bot. Inst. Paleobot. Ser. 8 no.5: 145-230 '64. (MIRA 17:6)

[illegible], Ye. F.

[illegible] of [illegible] ([illegible]) in [illegible] deposits of the Northern Caucasus. Bot. zhur. 50 no.8:1113-1115 Ag '65. (MIRA 18:10)

1. Botanicheskiy institut imeni V.L. Komarova AN SSSR, Leningrad.

KUTUZOV, A.

The movement begun by Anna Maslovaia is growing. Khim.prom. no.2: 120-121 Mr '54. (MLRA 7:6)
(Chemical industries)

USSR/Chemistry - Miscellaneous Kutuzov, A. FD-1738

Card 1/1 : Pub. 50-14/18

Authors : Kutuzov. A., Krivosheyev, S. A.

Title : News Items

Periodical : Khim. prom., No 1, 53-54, Jan-Feb 1955

Abstract : The results of the production plan for 1954 carried out by the Ministry of Chemical Industry, the improvement of the quality of scientific research work, the training and employment of specialists, awards made to the foremost enterprises of the chemical industry, and the results of a 1954 competition on the improvement of the production of fertilizers and the production of new types of fertilizers are discussed.

AUTHOR: Kutuzov, A. 307/ 64-58-4-17/20

TITLE: On Improving the Organization of Planning (Uluchshit' postanovku proyektirovaniya)

PERIODICAL: Khimicheskaya promyshlennost', 1958, Nr 4, pp. 258 - 258 (USSR)

ABSTRACT: In the first quarter of this year the Council of the Ministry of Chemical Industry investigated a number of problems concerning the work mentioned in the title in connection with changes in the direction of industry and development. This is connected with the decisions made by the May-General Meeting of the TsK KPSS (Central Committee of the CP of the Soviet Union). A number of institutions, with their directors being mentioned, is seriously criticized and the backwardness as compared to the standards fixed is condemned and commented on. Among others an insufficient coordination is mentioned as main cause for these shortcomings and practical decisions on the publication of technical documentations for complying with the prefixed standards as well as for the maintenance of quality are mentioned. The respective individuals in charge of these institutions were forced to control the fixed terms, the diagrams for the fulfil-

Card 1/2

On Improving the Organization of Projecting Work 307/64-58-4-17/20

ment of the documentation on planning and the publication of the data on the fulfilment achieved.

1. Chemical Industry--Standards 2. Chemical Industry--Organization

Card 2/2

DROZDOV, S.N.; KUTUZOV, A.A.

Boron requirements of spring wheat and barley in their ontogenic development. Nauch. dokl. vys. shkoly; biol. nauki no.1:129-131 '60. (MIRA 13:2)

1.Rekomendovana kafedroy fiziologii rasteniy Leningradskogo sel'skokhozyaystvennogo instituta.
(Wheat--Fertilizers and manures)
(Barley--Fertilizers and manures)
(Plants, Effect of boron on)

PA - 2665

AUTHOR: ANTONOV,YU.N., VAVILOV,YU.N., ZATSEPIN,G.T., KUTUZOV,A.A., SKVORTSOV,YU.V., KHRISTIANSEN,G.B.

TITLE: Structure of the Periphery of Extensive Atmospheric Cosmic Ray Showers. (Struktura periferii shirokikh atmosfernykh livney kosmicheskikh luchey, Russian).

PERIODICAL: Zhurnal Eksperim. i Teoret. Fiziki, 1957, Vol 32, Nr 2, pp 227-240, Russian)

Received: 5 / 1957 Reviewed: 6 / 1957

ABSTRACT: The present paper investigates the spatial distribution of the different components of a broad atmospheric cosmic ray shower at great distances from its axis (200 - 800 m). For a detailed study of this problem the Pamir-Expedition of the Academy of Science of the U.S.S.R. (summer and autumn 1950 and 1951) used a new method: In different places of the observation plain the flux density of all charged particles (and separate from it that of penetrating particles) was simultanously determined with hodoscopic devices. (Method of correlated hodoscopes).

Summary of results: The shower domain investigated here consists of an electron-photon component and a penetrating component (apparently myons). With increasing distance from the shower axis the relative share of the penetrating component increases considerably and at a distance r = 800 m the flux density of penetrating particles and of electrons is equal. The spatial distribution of the

Card 1/2

Structure of the Periphery of Extensive Atmo-- PA - 2665
spheric Cosmic Ray Showers.

total flux density of electrons and of penetrating particles is determined by the formula $k(r) \sim 1/r^n$ with $n \sim 2,0$. On account of the relatively slow decrease of flux densities of shower particles the periphery of the shower plays an essential part in the general balance of the flux of the shower particles. The mechanism of the transition of electrons to the periphery of the shower is reduced to the Coulomb scattering of these electrons by the nuclei of air atoms. The transition of Myons to the periphery of the shower is effected by their Coulomb scattering and also apparently at the expense of the emission angle in the elementary acts of the nucleus cascade process of the positive and negative myons producing these myons. Finally, data on the intensity of primary cosmic particles with extremely high energies of 10^{16} up to 10^{17} eV are given. (10 illustrations)

ASSOCIATION: Physical Institute "P.N.Lebedev" of the Academy of Science of the U.S.S.R.

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Card 2/2

Kutuzov, A.A.

21(4) PHASE I BOOK EXPLOITATION SOV/2583

International Conference on the Peaceful Uses of Atomic Engergy. 2nd, Geneva, 1958.

Doklady sovetskikh uchenykh; yadernyye reaktory i yadernaya energetika. (Reports of Soviet Scientists; Nuclear Reactors and Nuclear Power) Moscow, Atomizdat, 1959. 707 p. (Series: Its: Trudy, vol. 2) Errata slip inserted. 8,000 copies printed.

General Eds.: N.A. Dollezhal, Corresponding Member, USSR Academy of Sciences, A.K. Krasin, Doctor of Physical and Mathematical Sciences, I.I. A.I. Leypunskiy, Member, Ukrainian SSR Academy of Sciences, and V.S. Novikov, Corresponding Member, USSR Academy of Sciences, and V.S. Fursov, Doctor of Physical and Mathematical Sciences; Ed.: A.P. Alyab'yev; Tech. Ed.: Ye. I. Mazel'.

PURPOSE: This book is intended for scientists and engineers engaged in reactor designing, as well as for professors and students of higher technical schools where reactor design is taught.

COVERAGE: This is the second volume of a six-volume collection on the peaceful use of atomic energy. The six volumes contain the reports presented by Soviet scientists at the Second International Conference on Peaceful Uses of Atomic Energy, held from September 1 to 13, 1958 in Geneva. Volume 2 consists of three parts. The first is devoted to atomic power plants under construction in the Soviet Union; the second to experimental and research reactors, the experiments carried out on them, and the work to improve them; and the third, which is predominantly theoretical, to problems of nuclear reactor physics and construction engineering. Yu. I. Koryakin is the science editor of this volume. See SOV/2081 for titles of all volumes of the set. References appear at the end of the articles.

21(8),21(7) SOV/89-6-5-19/33

AUTHORS: Broder, D. L., Kutuzov, A. A., Kondrashov, A. P.

TITLE: The Dependence of the Removal Cross Sections of H_2O, B_4C, C, Fe, Pb on the Energy of Neutrons (Zavisimost' secheniy vyvedeniya H_2O, B_4C, C, Fe, Pb ot energii neytronov)

PERIODICAL: Atomnaya energiya, 1959, Vol 6, Nr 5, pp 578-581 (USSR)

ABSTRACT: By means of the removal cross section it is comparatively easy to calculate a shield consisting of a mixture of water and various elements. The removal cross sections were measured for 4 and 14.9 Mev neutrons ($D(d,n)He^3$ and $T(d,n)He^4$-reactions), for which purpose not water but boron carbide was used as the principal component. The measuring apparatus consisted of 3 cylindrical tanks (diameter 100 cm, thickness in the direction of the deuteron beam 115 cm). The first was filled with boron carbide (1.1 g/cm^3), which contained the neutron source in a special channel. A second and a third tank were connected with the first. During removal cross section measurement the material to be investigated

Card 1/3

took the place of the third tank. The fission chambers, which contain Th^{232}, are used as neutron detectors in a number of channels provided for this purpose. The channels not in use are enclosed in aluminum shells which are filled with boron carbide. The material to be investigated is filled into boxes (cross section 71.100 cm) of 9 cm thickness. The thickness of the lead plates is, however, 9 and 18 cm respectively.

Measuring results:

material	density g/cm³	removal cross section E_n = 4 Mev	removal cross section E_n = 14.9 Mev
H_2O	1	0.165±0.008	0.084±0.004
B_4C	1.67	0.083±0.003+)	0.058±0.002+)
Fe	7.83	0.169±0.007	0.137±0.005
Pb	11.3	0.113±0.005	0.097±0.005

+) from removal cross section measurements for boron carbide and graphite, corresponding to the reciprocal relaxation

The Dependence of the Removal Cross Sections of H_2O, B_4C, C, Fe, Pb on the Energy of Neutrons

SOV/89-6-5-19/33

lengths at such distances, which correspond to 8-15 free lengths of paths of neutrons in B_4C and C. The results obtained are compared with those of 5 other publications (table and diagrams), and satisfactory agreement was found. The method of removal cross sections may be extended also to calculation of fast neutron distribution in materials containing other light elements instead of hydrogen.
Professor A. K. Krasin and Candidate of Physico-mathematical Sciences V. V. Orlov acted as advisers. G. N. Deryagin, N. I. Dudkin, A. P. Klimov, V. G. Liforov, Z. [illegible]. Blistanova, A. I. Chusov, and V. S. Tarasenko assisted in experimental work. There are 2 figures, 1 table, and 7 references, 4 of which are Soviet.

SUBMITTED: January 21, 1959

Card 3/3

21 (8)

AUTHORS: Broder, D. L., Kutuzov, A. A., Levin, V. V., Orlov, V. V. Turusova, A. V.

SOV/89-7-4-1/28

TITLE: The Passage of Fast Neutrons Through Lead and Iron

PERIODICAL: Atomnaya energiya, 1959, Vol 7, Nr 4, pp 313-320 (USSR)

ABSTRACT: The present paper gives the results obtained by measuring the spatial distribution of fast neutrons (originating from monoenergetic neutrons of the energy E_0 = 4 Mev and E_0 = 14.9 Mev) and of neutrons of atomic reactors in iron and lead. First, the experimental arrangements are discussed. The reactor of the Pervaya atomnaya elektrostantsiya (First Atomic Power Plant), an experimental nuclear reactor of the VVR type with ordinary water and enriched uranium, and a neutron generator were used as neutron sources. The spatial distribution of neutrons in iron and lead was measured by means of a neutron generator, a neutron detector, and D- and T-targets. A Th^{232}-fission chamber and threshold indicators ($Al^{27}(n,p)Mg^{27}$, $P^{31}(n,p)Si^{31}$, and $S^{32}(n,p)P^{32}$) were used as detectors. The distribution of thermal and epithermal neutrons was measured

Card 1/3

by means of a U^{235}-fission chamber. The results of these measurements in iron and lead are shown by 4 diagrams. The authors then theoretically investigate an infinite homogeneous medium in which an unbounded, plane isotropic source of monoenergetic neutrons with the energy E_0 is located. Neglecting the moderation of neutrons in elastic scattering, the kinetic equation for the neutron collision density $\psi(\tau,E)$ is written down. The inelastic scattering is here assumed to be isotropic. The aforementioned equation is then transformed by means of a Fourier transformation, and is solved by employing the method of spherical harmonics. The calculation is then followed step by step, and the asymptotic solution is explicitly written down. A formula is written down for the neutron flux with the energy E in a medium with point source. The results shown by some diagrams for iron agree well with the experiment. The same also applies to the results for lead. The computation method suggested makes it possible, if the differential cross sections of elastic and inelastic scattering of neutrons are sufficiently well known, to determine the spatial- and energy distribution of neutrons in thick layers of matter having comparatively high nuclear charge numbers (e.g. greater than 56)

with sufficient accuracy. At large distances from the source, the neutron spectrum is enriched with considerably slowed-down neutrons. If the energy distribution is known, the shield may be calculated according to the multigroup theory. The authors thank Professor A. K. Krasin, Candidate of Technical Sciences A. N. Serbinov, and the scientific co-worker V. A. Romanov for their constant interest in the present paper and for their collaboration in the experiment. Besides, the authors thank V. G. Liforov, Z. S. Blistanov, and V. S. Tarasenko for their assistance in the experiments. S. A. Kurkin assisted in working out the calculation method, and M. B. Yegiazarov, V. S. Dikarev, V. G. Madeyev, Ye. N. Korolev, and N. S. Il'inskiy further took part in the experiments. There are 9 figures and 14 references, 4 of which are Soviet.

SUBMITTED: January 21, 1959

21.1310

SOV/[illegible]-1-10/[illegible]

AUTHORS: Broder, D. L., Kondrashov, A. P., Kutekov, A. A., Lashuk, A. I.

TITLE: Effect of Layers Containing Boron on the Yield of Secondary Gamma Radiation. Letter to the Editor

PERIODICAL: Atomnaya energiya, 1960, Vol 8, Nr 1, pp 89-91 (USSR)

ABSTRACT: Since in most cases the size and shape of the reactor shielding is determined by the amount of hard secondary gamma radiation, the authors investigated the possibility of reducing this amount by capturing in boron carbide the thermal neutrons producing the radiation. Neutrons captured in boron cause soft γ-rays of approximately 0.5 mev, while neutrons captured in other building materials, particularly steel, produce high energy γ-radiation. The geometry of the experiment is given in Fig. 1.

Card 1/9

Effect of Layers Containing Boron on the Yield of Secondary Gamma Radiation. Letter to the Editor

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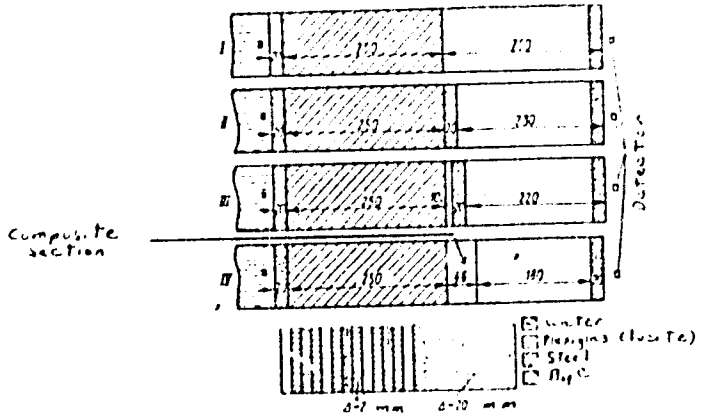

Fig. 1. Geometry of the experiment.

Card 2/9

Effect of Layers Containing Boron on the Yield of Secondary Gamma Radiation. Letter to the Editor

[illegible]

The cross section of the [illegible] was [illegible] a 7[illegible] mm, and the steels under investigation were Steel St-3 and stainless steel IKh18N9T. The [illegible] of α = [illegible] of 2·10⁶ neutrons/sec strength was located in the water shielding in front of steel. Both the steel and plexiglas (luelte) had channels for indicator probes. Neutron distribution was determined using the [illegible] of indium 20 mm in diameter, and [illegible] in cadmium containers. Figure 2 shows the neutron distribution in steel St-3.

Card 3/9

Effect of Layers Containing Boron on the Yield of Secondary Gamma Radiation. Letter to the Editor

Title
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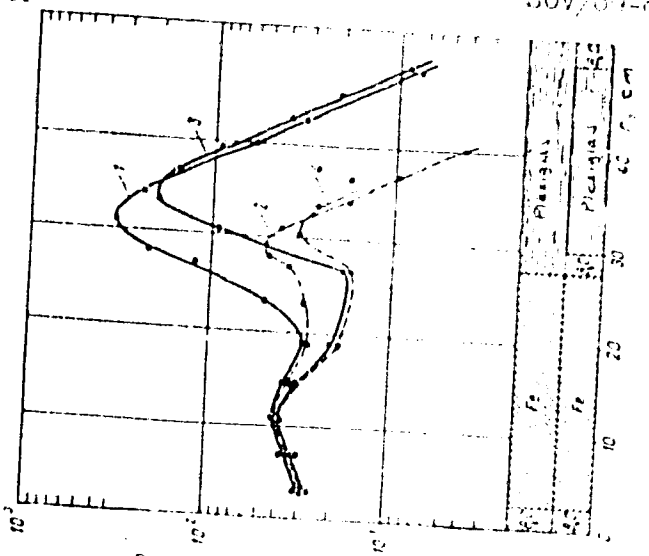

Card 4/9

Fig. 2. See Card 5/9 for Caption

[illegible]
Letter to the Editor

See Card 4/9 for Fig. 2.

Fig. 2. Spectral distribution of neutrons in St-3 steel and plexiglas (to the) point: (1) indium measurements (no B_4C layer); (2) measurements with indium in cadmium (no B_4C layer); (3) indium measurements (between steel and plexiglas is placed a layer of B_4C 20 mm thick and of density 1.1 gm/cm^3); (4) measurements with indium in cadmium (between steel and plexiglas is placed a layer of B_4C 20 mm thick and of density 1.1 gm/cm^3).

Spectrum of γ-rays was measured by means of a NaJ(Tl) single-crystal γ-spectrometer. The diameter and height of the crystal were 60 mm. Resolving power for the Zn^{65} line was 11%. The analysis of impulses was performed by means of a 12-channel amplitude analyzer

Card 5/9

with ferrite core ... Figures 3 and 4 show the measured γ-spectra.

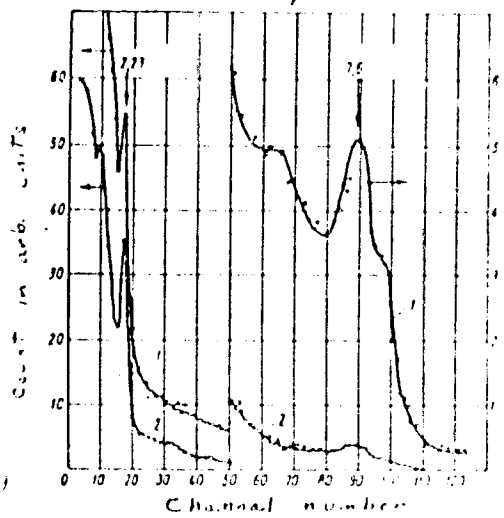

Fig. 3. Spectrum of γ-quanta produced in the St-3 steel prism: (1) No B_4C layer; (2) between steel and plexiglas (luelite) is placed a layer of B_4C, 20 mm thick and density 1.1 gm/cm^3.

Effect of Layers of Boron Carbide on the Yield of Secondary Gamma Rays
Letter to the Editor

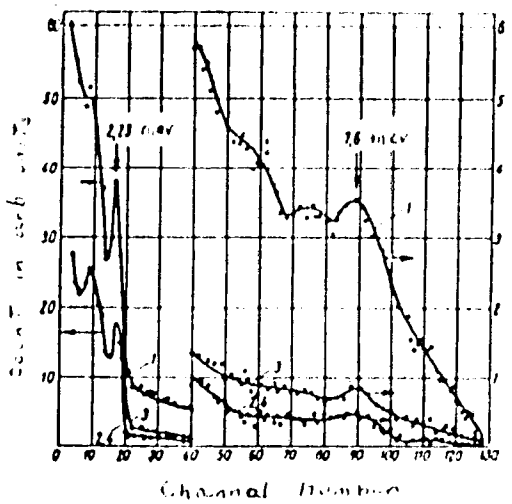

Fig. 1. Spectra of γ quanta passed through various absorbers: (1) No B_4C layer; (2) between steel and plexiglas is placed a layer of B_4C (alternative II, Fig. 1), or a composite sandwich with plexiglas, SiO_2 and B_4C (alternative IV, Fig. 1); (3) between steel and plexiglas is placed a layer of plexiglas and a layer of B_4C (alternative III, Fig. 1).

Card 7/9

Effect of Layers Containing [illegible] on the Yield of Secondary Gamma Radi[illegible]. Letter to the Editor

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In the case of the [illegible] steel, the intensity of the 7.6 MeV γ-[illegible] is [illegible]. In the case of the steel [illegible] for the same [illegible] is 7.[illegible]. [illegible] and steel, [illegible] γ-lines. The [illegible] calculated [illegible] of the neutron capture of γ-radiation [illegible] after introduction of the boron [illegible] between the steel and plexiglas, using the measured neutron distribution from Fig. 2. The spectrum of neutrons in steel used in this calculation was determined approximating a half-infinite steel block with an [illegible] "black" middle boundary. Corrections were made for the self-shielding of the [illegible]. The [illegible] decrease of [illegible] γ [illegible] good agreement with [illegible]. N. A. Al[illegible], V. S. [illegible], and E. V. Sa[illegible] were [illegible]. There are 4 figures; and [illegible], 1 U.S. [illegible]

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Effect of Layers Containing Boron on the Yield of Secondary Gamma Radiation. Letter to the Editor

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reference is: Reactor Physics Constants, ANL-5800 (1958).

SUBMITTED: August 3, 1959

Card 9/9

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B108/B102

21.5250
26.2240

AUTHORS: Broder, D. L., Kondrashev, A. P., Kutuzov, A. A.

TITLE: Spatial neutron distribution in mixtures of boron carbide with iron and lead

SOURCE: Krupchitskiy, P. A., ed. Neytronnaya fizika; sbornik statey. Moscow, 1961, 263 - 277

TEXT: The results of experiments given in this paper are to verify the possibility of calculating the spatial distribution of fast neutrons in media containing boron carbide. The fast neutrons were obtained from interaction of 1-Mev deuterons with heavy ice (4-Mev neutrons) and of 400-kev deuterons with tritium adsorbed on zirconium (14.9-Mev neutrons). These neutron sources were placed before 9 steel tanks filled with boron carbide and each containing a thin-walled cavity in the middle to place the detector in. The free cavities were filled with boron carbide. In some of the experiments, tank 2 or tank 2 and 3 were replaced by laminated iron or lead blocks. Other experiments provided steel and lead plates between the tanks. Since the tanks were CT-30 (ST-30) steel, all the measurements were made with boron carbide "containing" 3.8% by volume of

Card 1/2

Spatial neutron distribution...

iron. The results showed that iron and lead have similar removal cross sections. Substances with small inelastic scattering cross sections, as boron carbide, have greater removal cross sections in water than in other moderators not containing hydrogen. The ratio of intermediate and slow neutrons ($E_n < 1.5$ Mev) to the fast neutrons was calculated. It was found to be 3.56 for 4-Mev neutrons and 2.58 for 14.9-Mev neutrons. The experimental values were lower and closer to each other. This is due to a lower sensitivity of the U^{235} fission chamber at neutron energies $E > 100$ kev. The authors thank Professor A. K. Krasin, V. V. Orlov, Candidate of Physical and Mathematical Sciences, G. N. Beryagin, N. N. Dudkin, A. P. Klimov, V. G. Liforov, Z. S. Blistanova, A. I. Chusov, V. S. Tarasenko, and R. G. Bulycheva for help. There are 10 figures, 1 table, and 11 references: 4 Soviet and 7 non-Soviet. The four references to English-language publications read as follows: Blizard E. P. Ann. Rev. Nucl. Sci., 5, 73 (1955); Goldstein H. The attenuation of gamma rays and neutrons in reactor shield, NDCA, N. Y., 1957; Burgeois I. et al. Methods and Experimental Coefficients Used in the Computation of Reactor Shields. A/Conf 15/p/1190 France, 1958; Duggal V., Puri S., J. Appl. Phys., 29, 675 (1958).

Card 2/2

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S/170/62/005/002/004/009
B104/B138

AUTHORS: Broder, D. L., Kutuzov, A. A., Levin, V. V.

TITLE: Shielding properties of water, polyethylene, and Plexiglas

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, v. 5, no. 2, 1962, 47 - 51

TEXT: In an effort to estimate the shielding action of hydrogenous mixtures against fast neutrons, the authors calculated the distribution of fast neutrons in hydrogen and water. The attenuation of a stream of fast neutrons in a hydrogenous mixture with the initial energy E_0 can be calculated from

$$\Phi(r, E_0, E_{rp}) = \frac{Q(E_0)}{4\pi r^2} e^{-\sum_i \rho_i \sigma_{rem}^i (E_0)(1-\theta)r} \int_{E_{rp}}^{E_0} \varphi(E, E_0, \theta r)\, dE, \quad (1),$$

where $Q(E_0)$ is the power of a point source of neutrons, ρ is the volume part of hydrogen nuclei in the shield, and $\varphi(E, E_0, \theta r)$ is the spectrum of moderated neutrons. The results are consistent with H. Goldstein's (Fundamental Aspects of Reactor Shielding. Pergamon Press, London-Paris, 1959).

Card 1/2

Shielding properties of ...

The removal cross section for oxygen was obtained from the spatial distribution of neutrons in water and hydrogen. For the purpose of checking the validity of Eq.(1), the distribution of 4-Mev and 14.9-Mev neutrons in polyethylene and Plexiglas was measured. Deuterium and tritium absorbed on zirconium were used as targets, which were bombarded with 1-Mev and 0.4-Mev deuterons. The experiments showed that a shield against neutrons of 0.2 - 15 Mev, consisting of O, C, Fe, and Pb, can be calculated using the neutron spectrum in hydrogen, the removal cross sections for neutrons as functions of energy, and the analogous cross sections for iron and lead. Z. S. Blistanova, V. P. Bogdanov, G. V. Rykov, and V. S. Tarasenko participated in the work. There are 4 figures and 5 references: 4 Soviet and 1 non-Soviet.

SUBMITTED: April 17, 1961

Card 2/2

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S/089/62/012/001/004/019
B102/B138

AUTHORS: Broder, D. L., Kayurin, Yu. P., Kutuzov, A. A.

TITLE: Passage of gamma radiation through heterogeneous media

PERIODICAL: Atomnaya energiya, v. 12, no. 1, 1962, 30 - 55

TEXT: The buildup factor was measured for heterogeneous media, consisting of different combinations of shielding materials (polyethylene, Al, Fe, Pb). Co^{60} was used as point source (~1 g-equ. Ra, E_0 = 1.25 Mev).

Various combinations of ~10 mm thick plates (Fe and Pb: 700 · 700 mm; polyethylene (P) and Al: 1000 · 1000 mm) were investigated. A plastic scintillator connected via a lightpipe to a ФЭУ-24 (FEU-24) photomultiplier was used as a detector. Dose rates were varied in the range 1 - 10^5 relative units. Measurement accuracy was about ± 10%. The following combinations were investigated: (P) + Pb, (P) + Fe, Fe + Pb, Pb + (P), Fe + (P), Pb + Fe, with the first material nearest to the source. The buildup factor was calculated by the empirical formula

$B_{heter.} = \sum_{n=1}^{N} B_n(\sum_{i=1}^{n} \mu_i x_i) - \sum_{n=2}^{N} B_n(\sum_{i=1}^{n-1} B\mu_1 x_1)$; B_n is the buildup factor of

Card 1/2

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the n-th material, $\mu_i x_i$ is the layer thickness in terms of mean free path $\mu_{(P)} = 0.061$ cm^{-1}, $\mu_{Al} = 0.149$ cm^{-1}, $\mu_{Fe} = 0.423$ cm^{-1}, $\mu_{Pb} = 0.650$ cm^{-1}. The buildup factors calculated with this formula agreed with the measured ones within the limits of experimental accuracy. It is recommended for use at energies near 1 Mev. V. A. Shalin and G. V. Rykov are thanked for assistance. There are 7 figures and 7 references: 4 Soviet and 3 non-Soviet. The reference to the English-language publication reads as follows: M. Berger, J. Doggett. J. Res. Nat. Bur. Standards, 56, 89 (1956).

SUBMITTED: April 17, 1961

BRODER, D.L.; KUTUZOV, A.A.; LEVIN, V.V.; FROLOV, V.V.

Application of "yield cross-section" methods to the calculation of shielding containing no hydrogen. Inzh.-fiz.zhur. 5 no.12: 65-70 D '62. (MIRA 16:2)
(Neutrons--Scattering) (Shielding(Radiation))

33234

S/089/62/012/002/009/013
B102/B138

26.2240

AUTHORS: Broder, D. L., Kondrashov, A. P., Kutukov, A. A., Nesmov, V. A., Sergeyev, Yu. A., Turusov, A. V.

TITLE: Multigroup methods of calculating biological shielding

PERIODICAL: Atomnaya energiya, v. 12, no. 2, 1962, 127 - 130

TEXT: The spatial energy distribution for biological shields is calculated for a source at a distance of 40 cm. Seven- and ten-group methods are used and the calculations are made in diffusion-age and diffusion approximations, respectively. As the lower limits of the groups the following energies were chosen for the seven-group method: $1.5\cdot10^6$, $9\cdot10^6$, $4.5\cdot10^5$, $3\cdot10^3$, 3.3, E_{lim} and 0 ev, and for the ten-group method: $4\cdot10^6$, $2.5\cdot10^6$, $1.5\cdot10^6$, $7\cdot10^5$, $3\cdot10^5$, $4\cdot10^4$, $1\cdot10^3$, 6.7, E_{lim} and 0 ev. Spectrum and group constants are calculated for both groups and the results are compared graphically with experimental ones. The experiments were made with the critical assembly of a water moderated

Card 1/3

reactor with a water side reflector. The shield investigated formed the bottom reflector. Three types of shields were investigated, consisting of several layers of various kinds of steel, lead, boron carbide and polyethylene. The neutron flux in the assembly was measured with a copper foil, the thermal-neutron flux in the core with a copper indicator and an U^{235} fission chamber, and, in the experimental assemblies, with a copper indicator in a Cd container. Comparison between theoretical and experimental results permits the following conclusions: 1) Both the multigroup methods, and the group-constants chosen, are suitable for calculating the spatial distribution of neutron energy in shields containing Fe, Pb and H. 2) For shielding systems containing B the agreement with experiment is within 20% error limits. 3) The seven-group method can also be used to determine the spatial distribution of fast neutrons which is characteristic of delayed-neutron flux distribution For a source emitting 4-Mev neutrons and with large shield thicknesses, the ten-group results differ from the experimental ones by not more than 30%. V. A. Gushchina, L. V. Marchenko, Z. P. Sokolova, Z. S. Blintanova and A. M. Antakhova took part in the calculations, N. A. Alesmin and R.

G. Bulycheva in the experiments. The reactor team members I. G. Morozov, Ye. I. Inyutin, V. K. Labuzov and N. G. Uvarov are thanked for their work. There are 4 figures, 1 table, and 12 references: 7 Soviet and 5 non-Soviet The reference to the English-language publication reads as follows: D. Hughes, L. Harvey. Neutron cross section, 1955.

SUBMITTED: April 17, 1961

Card 3/3

BRODER, D.L.; KAYURIN, Yu.P.; KUTUZOV, A.A.

Calculating the factors of γ-ray build-up in heterogeneous media. Atom.energ. 13 no.6:593-595 D '62. (MIRA 15:12)
(Gamma rays) (Nuclear reactions)

ACCESSION NR: AT4019031 S/0000/63/000/000/0052/0060

AUTHOR: Broder, D. L.; Kutuzov, A. A.; Levin, V. V.; Frolov, V. V.

TITLE: Application of the "removal cross section" method to the computation of non-hydrogen-containing shielding

SOURCE: Voprosy* fiziki zashchity* reaktorov; sbornik statey (Problems in physics of reactor shielding; collection of articles). Moscow, Gosatomizdat, 1963, 52-60

TOPIC TAGS: nuclear reactor, reactor shielding, iron shielding, lead shielding, non-hydrogenous shielding, removal cross section, neutron, neutron spatial distribution, neutron decelerator, aluminum shielding, boron carbide

ABSTRACT: The authors first briefly describe the removal cross section method for the computation of the spatial distribution of neutron streams in hydrogen-containing shielding. Some of the limitations of the method are discussed along with an analysis of the difficulties often encountered in its application (for example, in homogeneous mixtures). The hypothesis has previously been advanced that, by prescinding from the question of the accumulation of low-energy neutrons, the removal cross section technique might be applied to media

Card 1/4

ACCESSION NR: AT4019031

containing other light decelerators in place of hydrogen. In these previous investigations, boron carbide in a mixture with iron and lead was studied as the decelerator. Some of the findings of this research are discussed in the present article, which also gives additional experimental data which prove the feasibility of extending and generalizing the removal cross section method to heavier slowing media. Aluminum was employed as the decelerating medium in the tests reported on in this paper. Neutron sources with E = 4 Mev and 14.9 Mev were used. In addition, measurements were made of the removal cross sections of iron and lead in boron carbide in the fission neutron spectrum and the removal cross section of iron in the spectrum of the VVR reactor. As neutron sources the authors used the reactions D (d, n) He^3 with an initial neutron energy of E = 4 Mev, and T (d, n) He^4 (E = 14.9 Mev), and also a disk of U^{235} removed from the reactor of the Pervoy v mire atomnoy elektrostantsii (World's First Atomic Power Station) and placed in a stream of thermal neutrons. The sources were in the form of disks with a diameter of 10 cm for the mono-energetic neutron sources, and 46 mm for the fission spectrum source. Fast neutrons were detected by means of a fission chamber with Th^{232}. Further details on the experimental apparatus are given in the article. Graphs are presented showing the spatial distribution of the fast

Card 2/4

ACCESSION NR: AT4019031

neutrons in different substances and mixtures, as well as the dependence of the removal cross sections of iron and lead in aluminum (and of polyethylene and plexiglass in aluminum) for neutrons with E = 4 Mev and 14.9 Mev on various controlled experimental factors (distance between source and detector, distance between block of removed material and detector, etc). A table is given showing removal cross sections measured in water, boron carbide and aluminum. It is shown that the removal cross section method is applicable to the computation of shielding in which other light media are employed as decelerators in place of water: for example, boron carbide or aluminum. The magnitude of the removal sections for the majority of the substances tested depends only slightly on the choice of the decelerating medium. If a light component is lacking in the shielding, the authors found that the use of the removal cross section method is possible provided the removal cross section of the material in the given medium is known or if the lower boundary of the energy group is substantially raised. Several other significant conclusions are discussed in the article. "The authors thank V. P. Bogdanov, S. G Osipov, G. V. Ry*kov, V. S. Tarasenko and A. I. Chusov for taking part in the measurements."

Card 3/4

ACCESSION NR: AT4019031

ASSOCIATION: none

SUBMITTED: 14Aug63	DATE ACQ: 27Feb64	ENCL: 00
SUB CODE: NP	NO REF SOV: 007	OTHER: 003

Card 4/4

ACCESSION NR: AT4019032 S/0000/63/000/000/0060/0074

AUTHOR: Broder, D. L.; Kondrashov, A. P.; Kutuzov, A. A.; Naumov, V. A.; Sergeyev, Yu. A.; Turusova, A. V.

TITLE: An experimental justification of multigroup methods for the computation of biological shielding

SOURCE: Voprosy* fiziki zashchity* reaktorov; sbornik statey (Problems in physics of reactor shielding; collection of articles). Moscow, Gosatomizdat, 1963, 60-74

TOPIC TAGS: nuclear reactor, reactor shielding, neutron scattering, removal cross section, biological shielding, neutron, neutron distribution, multigroup method, diffusion approximation

ABSTRACT: The authors note that the computation of biological shielding involves the determination of the space-energy distributions of the neutrons in media containing light and heavy nuclei. A number of methods, based in one way or another on the solution of kinetic equations, have been developed to meet this need. Several of them are briefly examined and criticized. In the present article, two methods of solving the problem are considered: a 10-group and a 7-group method in a diffusion and diffusion-age approximation,

Card 1/4

ACCESSION NR: AT4019032

respectively. The applicability of this kind of approximation for shielding computations is not evident if strong absorption is present. Hydrogen slowing also complicates the use of these methods to a considerable degree. Neutron scattering with non-elastic collisions is isotropic, while the anisotropy of elastic scattering may be corrected by introducing the transport section of the scattering. At lower energies, elastic scattering becomes more isotropic and absorption processes begin to play an important role only in the lower groups. On the basis of this circumstance, an attempt was made to justify experimentally the applicability of the methods of computation discussed in this article to the space-energy distribution of neutrons at any distance from the source. The 7-group method was developed for the purpose of introducing certain corrections and improvements into the calculations of the fast neutron groups. The basic idea resolves itself to the assignment of the spatial distribution of the group of fast neutrons with energy E > 1.5 Mev by the semiempirical metho of "removal cross sections" with subsequent computation in a diffusion-age approxdmation. The authors note that it has been demonstrated that the difference in the results of calculation in the age approximation and the exact solution even for water, at such distances from the source as justify an age approch, does not exceed 30%. This fact gives rise to the hope

Card 2/4

ACCESSION NR: AT4019032

that the results of the computations described in this article will be favorable. The refinements described in the paper deal only with the neutrons with energies above 1.5 Mev, since it is these neutrons, as a rule, which determine the spatial distribution of the neutron streams. Both computation methods were applied to the computation of three varieties of shielding, of rather small thickness, both with and without boron. The purpose of the introduction of the boron was to study the problems of the applicability of the diffusion and diffusion-age approximations to the computation of shielding with different neutron absorption in the thermal and superthermal regions. These same varieties were investigated experimentally. According to the original intention, the simplicity of the method was to be expressed in the relatively small number of energy groups. However, the transition from a larger number of groups to a smaller was natural and, for this reason, 7- and 10-group systems of constants were developed. In the first sections of the article, the selection of groups in the 7- and 10-group methods and the neutron spectrum in the 10-group method are considered. Basic equations and group constants for the 10-group method are presented and discussed in a further section, after which the results of the 10-group computations are analyzed. Only after this are the basic equations and group constants of the 7-group method derived. The experimental check of the computations was made with a reactor having a water decelerator. Test conditions are described in the article. The authors

Card 3/4

ACCESSION NR: AT4019032

found that both the 7- as well as the 10-group method and the selected systems of group constants may be used to compute the space-energy distributions in mixtures of iron with water and lead at the thickness considered in the study. These methods yield satisfactory results (within 20%) for boron-containing media; for example, in boron steels. In the present work, a direct experimental confirmation of the greater accuracy of the 7-group method in comparison with the 10-group technique was therefore not obtained. Orig. art. has: 17 formulas and 8 figures.

ASSOCIATION: none

SUBMITTED: 14Aug63	DATE ACQ: 27Feb64	ENCL: 00
SUB CODE: NP	NO REF SOV: 006	OTHER: 005

Card 4/4

ACCESSION NR: AT4019049 S/0000/63/000/000/0198/0207

AUTHOR: Broder, D. L.; Kayurin, Yu. P.; Kutuzov, A. A.

TITLE: The passage of Gamma radiation through heterogeneous media

SOURCE: Voprosy* fiziki zashchity* reaktorov; sbornik statey (Problems in physics of reactor shielding; collection of articles). Moscow, Gosatomizdat, 1963, 198-207

TOPIC TAGS: nuclear reactor, reactor shielding, iron shielding, lead shielding, Gamma radiation, Gamma ray attenuation, Gamma radiation shielding, Gamma radiation accumulation factor, polyethylene shielding, aluminum shielding

ABSTRACT: The authors note that the computation of shielding against gamma-radiation requires a knowledge of one of the essential characteristics of the material — the γ-radiation accumulation factor. For homogeneous media the accumulation factor $B(E_0, x, z, g)$ is a function of the initial energy of the γ-radiation E_0, the thickness of the material x, the ordinal number of the substance z, and also the form of the source g. The significance of the accumulation factor for such homogeneous media is discussed in some detail. Some recommendations, based on general physical considerations, with respect to the computation

Card 1/2

ACCESSION NR: AT4019049

of accumulation factors for heterogeneous shieldings consisting of two materials are analyzed. An experimental determination is made of the dose accumulation factor for heterogeneous media, consisting of various combinations of materials (polyethylene, aluminum, iron, lead), and for γ-quanta energies of 1.25, 2.76 and ca. 6.4 Mev. As the source of the γ-quanta with an energy of 1.25 Mev, Co^{60} was used; for the quanta with the 2.76-Mev energy level, Na^{24} was employed. In order to obtain the high-energy (6.4 Mev) γ-quanta the authors made use of an $F^{19}(p,\alpha)O^{16}$ reaction. On the basis of the experiments with Co^{60} and general physical considerations, an empirical formula was derived for the computation of accumulation factor in a heterogeneous medium consisting of any number of layers of different materials. The experiments with Na^{24} and the 6.4-Mev γ-ray source demonstrated that this formula may be used even in the case of γ-quanta energy levels in excess of the critical. Experimentally derived accumulation factors differ from those computed according to this formula by no more than 15%. Orig. art. has: 3 formulas, 1 table and 9 figures.

ASSOCIATION: none

SUBMITTED: 14Aug63 DATE ACQ: 27Feb64 ENCL: 00

SUB CODE: NP NO REF SOV: 004 OTHER: 004

Card 2/2

L 58753-65 EWA(h)/EWT(m) DM

ACCESSION NR: AP5012480 UR/0089/65/018/004/0404/0408 23
621.039.538.7 16

AUTHORS: Broder, D. L.; Zhilkin, A. S.; Kutuzov, A. A. B

TITLE: Spectra of fast neutrons in heavy media and in water

SOURCE: Atomnaya energiya, v. 18, no. 4, 1965, 404-408

TOPIC TAGS: fast neutron, neutron moderator, water moderator, iron moderator, lead moderator, neutron spectrum

ABSTRACT: The main purpose of the investigation was to determine the behavior of the neutron spectrum near the interface between a heavy medium and water, such as occurs in the construction of some biological shields. The authors measured with a scintillation spectrometer the spectra of moderated neutrons in iron, lead and water behind a layer of iron and lead. The neutrons came from monoenergetic sources of 3.4 and 15 MeV energy. The spectrometer used was a stilbene crystal in conjunction with a FEU-13 photomultiplier and an AI-100 pulse-height analyzer. The measurements were made in prisms

Card 1/3

ACCESSION NR: AP5012480

of iron and lead measuring 710 x 710 x 600 mm. When measurements were made with water, the iron and lead layers were located between the target of the accelerator and a tank with water. Plots of the spectra in iron, lead, iron and water, and lead and water are presented for the various energies. In the case of iron alone, the spectrum did not agree with earlier calculations, probably because of the oversimplification of the latter. The spectrum of neutrons in lead does agree with earlier calculations. In the case of water-iron and water-lead shields, the spectrum of the neutrons at a considerable distance in the water behind the layer of the lead or the shield differs appreciably from that of the neutrons in pure water at the same distance, being richer in scattered and slow neutrons than in pure water. This is attributed to the softening of the spectrum in the metal and is in good agreement with the evaporation model of inelastic scattering at the neutron energies involved. 'The authors thank V. G. Zolotukhin, B. A. Kalmykov, V. I. Lobanov, M. P. Taraske, V. Ye. Tyrkich, Ye. V. Shestopalov for help with the work, and L. A. Trykov for a discussion of the results of the work.'

L 58733-65

ACCESSION NR: AP5012480

Original article has: 6 figures

ASSOCIATION: None

SUBMITTED: 08Jun64 ENCL: 00 SUB CODE: NP

NR REF SOV: 003 OTHER: 002

Card 3/3 hjp

L 27477-66 EWT(1)/T IJP(c)

ACC NR: AT6008420 SOURCE CODE: UR/3158/65/000/021/0001/0012

AUTHOR: Zolotukhin, V. G.; Kutuzov, A. A.; Broder, D. L.; Kham'yanov, L. P.; Yefimenko, B. A.; Shilkin, A. S.

ORG: None

TITLE: Analysis and generalization of the correlation method of measuring the particle lifetime distribution in a physical system

SOURCE: Obninsk. Fiziko-energeticheskiy institut. Doklady, no. 21, 1965, Analiz i obobshcheniye korrelyatsionnogo metoda izmereniya raspredeleniya vremeni zhizni chastits v fizicheskoy sisteme, 1-12

ABSTRACT: The authors present a complete statistical analysis of the correlation method of measuring the distribution of the lifetime of particles in a linear physical system. The method is reduced to a determination of the mutual correlation function between a pseudorandom signal used to modulate the intensity of the measured particles coming from the source, and the counting rate of the detectors. It is shown that the statistical accuracy of the method depends both on the off-duty factor of the modulating random signal and on the presence of a noise back-

Card 1/2

ground against which the measurements are made. In particular, it is shown that the conclusions made by T. E. Stern et al. (J. of Nucl. An., p.A/B, 16, 499, 1962) that the use of random (or pseudorandom) excitation can completely reduce the measurement time compared with the classical method (ordinary periodic excitation) is valid only when there is an appreciable background. When there is no background, on the average the statistical accuracy of the classical and correlation methods is approximately the same. A new method of pseudorandom modulation of the particle source is proposed, to take advantage of this fact. If the modulation is made coherent with the background noise, then it can be readily shown that the fast component of the background can be readily eliminated in the same manner as in the classical method, and the slow component can be eliminated by suitable choice of the off-duty factor of the modulating signal. This type of statistical modulation prevents loss of the peak value of the modulated intensity and thus permits the use of the peak power of the source and retain the favorable advantages of the correlation method. Orig. art. has: 6 figures and 13 formulas.

SUB CODE: 20/ SUBM DATE: 00/ ORIG REF: 001/ OTH REF: 002

L 05046-67 EWT(m)/EWP(t)/ETI IJP(c) JD/JR/GD

ACC NR: AT6027924 SOURCE CODE: UR/0000/66/000/000/0088/0103

AUTHOR: Broder, D. L.; Zhilkin, A. S.; Kutuzov, A. A.; Suvorov, A. P.

ORG: None

TITLE: Spectra of fast neutrons in heavy homogeneous media

SOURCE: Voprosy fiziki zashchity reaktorov (Problems in physics of reactor shielding); sbornik statey, no. 2. Moscow, Atomizdat, 1966, 88-103

TOPIC TAGS: fast neutron, neutron energy distribution, radiation shielding, neutron scattering

ABSTRACT: The spectra of fast neutrons in iron and lead are measured directly and the asymptotic spectra are calculated in the P_4-th approximation of the method of spherical harmonics using recent measurements for the excitation functions on individual levels in iron and lead. Approximate account is taken of neutron moderation in elastic scattering, and anisotropy due to direct interaction in inelastic scattering. Experimental measurements of the spatial energy distributions of neutrons were done on iron and lead specimens measuring 710×710×600 mm. Two reactions were used as neutron sources: $T(d,n)He^4$ (14.9 mev) and $D(d,n)He^3$ (3.35 mev). Since the deuterium target had a thickness of 20 mg/cm^2, the resultant neutron spectrum in the latter case is not monochromatic. This fact was taken into consideration in the calculations. The neutron spectro-

Card 1/2

L 05046-67
ACC NR: AT6027924

meter was a stilbene crystal combined with an FEU-13 photomultiplier and a 100-channel amplitude analyzer. The theoretical and experimental spectra for iron and lead are compared and show generally satisfactory agreement. Orig. art. has: 9 figures, 1 table, 32 formulas.

SUB CODE: 18,20/ SUBM DATE: 12Jan66/ ORIG REF: 011/ OTH REF: 010

Card 2/2

L 05041-67 EWT(m)/EWF(t)/ETI IJP(c) JD/WW/JG/JR/GD

ACC NR: AT6027925 SOURCE CODE: UR/0000/66/000/000/0104/0116

AUTHOR: Broder, D. L.; Zhilkin, A. S.; Zolotukhin, V. G.; Tarasko, M. Z.; Kutuzov, A. A.

ORG: None

TITLE: Fast neutron spectra in metal-water shielding

SOURCE: Voprosy fiziki zashchity reaktorov (Problems in physics of reactor shielding); sbornik statey, no. 2. Moscow, Atomizdat, 1966, 104-116

TOPIC TAGS: fast neutron, radiation shielding, neutron spectrum

ABSTRACT: The authors study the spectra of neutrons in the energy range above 1 mev from sources with energies of 3.35 and 14.9 mev in water and in water behind layers of iron and lead. A scintillation spectrometer with a stilbene crystal was used for the measurements. The sensitivity to γ-quanta was reduced by time division of irradiation. The reactions used for the neutron sources were $D(d,n)He^3$ and $T(d,n)He^4$ produced by using deutrons to bombard zirconium-tritium and zirconium-deuterium targets with a thickness of 18 mg/cm^2. For the measurements in water, the source was located in a paraffin block placed in direct contact to the water tank. The overall dimensions of the shielding were 710×710×600 mm. The scintillation spectrometer was combined with an FEU-13 photomultiplier and an AI-100-1 amplitude analyzer. The results show that

Card 1/2

L 0[illegible]-66
ACC NR: AT6027925

the neutron spectrum from a monochromatic source in lead and iron differs considerably from that in water. The iron and lead spectrum shows a stronger concentration of low-energy neutrons (<2 Mev). In the energy range from 2 Mev to the initial energy of the 3.35 Mev source and from 4-5 Mev to the initial energy of the 14.9 Mev source, the spectrum in water contains more neutrons than that in iron and lead. This form of spectrum explains the excellent shielding properties of iron and lead for fast neutrons as well as their poor characteristics for comparatively low-energy neutrons. These data also explain the excellent shielding properties of metal-water shielding throughout the entire energy spectrum. Spectra for neutrons in the energy region below the initial energy in water behind layers of lead and iron approach the shape of spectra in water at a thickness of greater than 20 cm. For thinner water layers, particularly below 2-3 Mev, the spectrum shows high concentrations of neutrons in comparison with the spectrum in water. In this transition region there is also a considerable difference from the spectrum in pure water for the energy range from 2 Mev to the initial energy. Orig. art. has: 10 figures, 1 table, 2 formulas.

SUB CODE:20,18/ SUBM DATE: 12Jan66/ ORIG REF: 004/ OTH REF: 004

Card 2/2 pla

AZIMOV,B.A.; AMEN-ZADE,Yu.A.; BORISOV,Ye.M.; BELKINA,G.L.; KUTUZOV,A.I.

Electric model solution of prismatic bar torsion problems.
Dokl. AN Azerb. SSR 11 no.4:233-242 '55. (MIRA 8:10)

1. Predstavleno deystvitel'nym chlenom Akademii nauk Azerbaydzhanskoy SSR M.F.Nagiyevym.
(Torsion)

AZIMOV, B.A.; AMENZADE, Yu.A.; BORISOV, Ye.M.; BELKINA, G.L.; KUTUZOV, A.I.

Solving problems of bending prismatic bars using an electric model. Dokl.AN Azerb.SSR 11 no.10:665-673 '55. (MLRA 9:5)

1.Azerbaydzhanskiy nauchno-issledovatel'skiy institut po dobyche nefti.Predstavlene deystvitel'nym chlenom AN Azerbaydzhanskoy SSR I.C.Yes'manom.

(Strains and stresses--Electromechanical analogies)

SOV/124-57-8-9198

Translation from: Referativnyy zhurnal. Mekhanika 1957 Nr 8 p 105 (USSR)

AUTHORS: Azimov B. A., Amenzade Yu. A., Borisov Ye. M., Belkina G. L., Kutuzov, A. I.

TITLE: On the Problem of the Twisting of Prismatic Rods (K voprosu kruchenlya prizmaticheskikh sterzhney)

PERIODICAL: Dokl. AN AzerbSSR. 1955 Vol 11 Nr 12 pp 825-831

ABSTRACT: The paper studies the twisting of prismatic rods with a cruciform section, a Tee section, and a sector bounded on the outside by a circumference and on the inside by an ellipse the center of which coincides with the center of the circumference. These problems are solved on an EM-7 electric analog computer for specified relative dimensions of the section. Representations of the isolines for all three cases are shown in graphic form. The values of the potential differences, as well as the components of the tangential (shear) stresses derived from these differences are submitted in tabular form. A stress-distribution diagram is presented for a round rod weakened by an elliptic cutout. The authors have made a comparison of the solutions obtained by means of the electric analog computer

Card 1/2

SOV-124-57-8-9298

On the Problem of the Twisting of Prismatic Rods

with the results obtained analytically for the cruciform section and the circular section with an elliptical cutout. It is shown that the error in the calculation of the shear stresses in the case of a cruciform section equals 1.08%, while in the case of the circular section it equals 24.57% at one point and 10.69% at another.

N. O. Gulkanyan

Card 2/2

AZIMOV, B.A.; AMENZADE, Yu.A.; KUTUZOV, A.I.; MAMEDOV, G.A.

Solving certain problems on water injection into a layer by means of electric modeling. Azerb. neft. khoz. 38 no.7:19-23 Jl '59. (MIRA 13:2)

(Oil field flooding)

AZIMOV, B.A.; MAMEDOV, G.A.; KUTUZOV, A.I.; ALEKPEROVA, L.A.

Solving some problems in studying the processes of the displacement of frontal waters from injection wells to recovery wells and their progressive enroachment. Azerb. neft. khoz. 40 no.5:21-24 My '61. (MIRA 16:12)

AZIMOV, B.A.; AMBARTSUMYAN, A.P.; BABICH, Yu.A.; BABICH, E.S.; GASANOVA, S.A.; GUKASOVA, Ye.K.; KUTUZOV, A.I.; MAMEDOV, G.A.; PIRVERDYAN, A.M.

Additional data on the problems of the development of the series "bʻeak" in the Neftyanyye Kamni field obtained by electric modeling methods. Azerb.neft.khoz. 41 no.8:26-29 Ag '62. (MIRA 16:1)

(Neftyanyye Kamni region--Oil well drilling, Submarine)
(Geological modeling)

KUTUZOV, A.S.

28-58-1-26/34

AUTHORS: Goryaynov, S.D., Kutuzov, A.S., and Safonov, V.I., Engineers

TITLE: Technical Documents for Textile and Light Industry Spare Parts Must Be Made Standard (Sozdat' yedinuyu tekhnicheskuyu dokumentatsiyu na zapasnyye detali mashin dlya tekstil'noy i legkoy promyshlennosti)

PERIODICAL: Standartizatsiya, 1958, # 1, pp 70-71 (USSR)

ABSTRACT: The authors stress the importance of a centralized and standard technical documentation for spare parts of both USSR and foreign-made equipment.

ASSOCIATION: Proyektmashdetal'

AVAILABLE: Library of Congress

Card 1/1

GORYAYNOV, S.D., inzh.; KUTUZOV, A.S., inzh.; SAFONOV, V.I., inzh.

Establish unified technical specifications for spare machine parts used in the textile and light industries. Standartizatsiia 22 no.1: 71-72 Ja-F '58. (MIRA 11:2)

1. Proyektmashdetal'.
(Machinery—Maintenance and repair)

L 52111-65 EWP(k)/EWA(c)/EWT(m)/EWP(i)/EWP(b)/EWA(d)/EWP(e)/EWP(t) Pf-4 IJP(c)
WH/JD/HW

ACCESSION NR: AP5015232 UR/0286/65/000/009/0006/0006

AUTHORS: Bashkirov, V. I.; Izraimovich, Ya. I.; Kutuzov, A. V.

TITLE: A method for fractionating a material. Class 1, No. 170435

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 9, 1965, 6

TOPIC TAGS: fractionation, ultrasound, synthetic stone, diamond, high pressure

ABSTRACT: This Author Certificate presents a method for fractionating a material, such as synthetic diamonds, in a liquid medium under the action of ultrasonic vibrations. To intensify the process of fractionating, the work is carried out at high pressure on the order of 5 atm.

ASSOCIATION: Organizatsiya gosudarstvennogo komiteta po oboronnoy tekhnike SSSR (Enterprise of the State Committee on Defense Technology, SSSR)

SUBMITTED: 28Dec63 ENCL: 00 SUB CODE: IE

NO REF SOV: 000 OTHER: 000

Card 1/1

KUTUZOV, B.A., inzh.

Nomogram for calculating the ventilation of development faces.
Bezop.truda v prom. 3 no.9:18-20 S '59. (MIRA 13:2)
(Mine ventilation)

KUTUZOV, B.A.

Recirculation of air in forced ventilation of blind workings as a cause of higher gas concentration in them. Zap. LGI 46 no.1:32-40 '62. (MIRA 16:6)

(Mine gases) (Mine ventilation)

KUTUZOV, B.A.

Analyzing the causes of accidents. Bezop.truda v prom. 5 no.3:6-7 Mr '61. (MIRA 14:3)

1. Nachal'nik Intinskoy gornotekhnicheskoy inspektsii Gosgortekhnadzora RSFSR.
(Inta—Coal mines and mining—Accidents)

KUTUZOV, B.N., gornyy inzh.

Efficient degree of ore breaking by blasting. Nauch. trudy VGI no.22:3-20 '57. (MIRA 11:9)
(Mining engineering) (Blasting)

KUTUZOV, B. N. Cand Tech Sci -- (diss) "Establishment of a rational degree of the crushing of rocks by explosions." Mos, 1958. 10 pp (Min of Higher Education USSR. Mos Mining Inst im I. V. Stalin), 12[illegible] copies (KL, 14-58, 113)

SUKHANOV, A.F., prof. , doktor tekhn. nauk; NAZAROV, P.P., kand. tekhn. nauk
KUTUZOV, B.N., kand. tekhn. nauk; DYUKOV, N.G., inzh.

Using cone bits in boring blast holes in asbestos quarries.
Stroi. mat. 5 no.10:26-28 O '59. (MIRA 13:2)
(Asbestos) (Boring machinery)

KUTUZOV, B.N., kand.tekhn.nauk

Efficient degree of breaking of rock by blasting and a determination of the most economical finished fraction size. Vzryv. rab. no.4:82-90 '60. (MIRA 15:1)

1. Moskovskiy gornyy institut imeni I.V. Stalina.
(Blasting)
(Stone, Crushed)

NAZAROV, P.P.; KUTUZOV, B.N.; APANASHCHENKO, V.G.

Operation of double-stage compressors in a single-stage system on roller-bit rigs. Gor. zhur. no.4:74 Ap '61. (MIRA 14:4)

1. Moskovskiy gornyy institut (for Nazarov, Kutuzov), 2. Tsentral'noye rudoupravleniye tresta Soyuzasbest.
(Boring machinery) (Air-compressors)

SUKHANOV, A.F., prof.; NAZAROV, P.P., dotsent; KUTUZOV, B.N., kand.tekhn.nauk

Research on boring blastholes with roller bits in strip mines of the State All-Union Association for the Mining and Preparation of Asbestos and for the Manufacture of Asbestos Products. Gor.zhur. no.5:34-37 My '61. (MIRA 14:6)

1. Moskovskiy gornyy institut.
(Rock drills)

KUTUZOV, B.N., kand.tekhn.nauk; KASATOCHKIN, A.V., inzh.; MAKAROVICH, D.N., inzh.; TOZAR', M.G., inzh.

Dust collection during boring with the cleaning of bore holes with compressed air. Bezop.truda v prom. 5 no.11:23-24 N '61. (MIRA 14:11)

1. Kafedra burovzryvnykh rabot Moskovskogo gornogo instituta. (Mine dusts--Safety measures)

KUTUZOV, Boris Nikolayevich; PSHENICHNYY, Mikhail Andreyevich; DOKUCHAYEV, M.M., inzh., retsenzent; DEMIDYUK, G.P., kand. tekhn. nauk, retsenzent; BYKHOVSKAYA, S.N., red. izd-va; PRONINA, N.D., tekhn. red.

[Blaster in open-pit mines]Vzryvnik na otkrytykh gornykh razrabotkakh. Moskva, Gosgortekhizdat, 1962. 154 p. (MIRA 15:9)

(Blasting) (Quarries and quarrying)

SUKHANOV, Afanasiy Filimonovich, prof., doktor tekhn.nauk, red.;
NAZAROV, Petr Petrovich; KUTUZOV, Boris Nikolayevich;
NEVSKIY, Vladimir Leonidovich; DMITRIYEV, Aleksey
Pavlovich; GOLOVIN, Grigoriy Mikhaylovich; MISNIK,
Yuriy Mikhaylovich; KHANUKAYEV, Aleksandr Nisanovich;
KOROLEVA, T.I., red.izd-va; SHKLYAR, S.Ya., tekhn. red.

[Boring and blasting operations] Burovzryvnye raboty. [By]
A.F.Sukhanov i dr. Moskva, Gosgortekhizdat, 1962. 242 p.
(Boring) (Blasting) (MIRA 16:9)

KUTUZOV, B.N., kand.tekhn.nauk; MIKHEYEV, I.G.

Dry dust collecting on drilling rigs. Gor.zhur. no.5:68-70 My '62. (MIRA 16:1)

1. Moskovskiy gornyy institut.
(Boring machinery) (Dust collectors)

KUTUZOV, B.N., kand.tekhn.nauk; LIN' DE-YUY [Lin Tê-yu"]

Action of the detonation of a charge in a fractured medium.
Gor. zhur. no.9:41-43 S '62. (MIRA 15:9)

1. Moskovskiy gornyy institut.
(Blasting)

TITARENKO, Petr Yakovlevich; TEREKHIN, Vyacheslav Nikolayevich; REMENNIK, Lev Moiseyevich; SUKHANOV, Afanasiy Filimonovich; NAZAROV, Petr Petrovich; KUTUZOV, Boris Nikolayevich; TOKAR', Moisey Grigor'yevich; SONIN, Boris Aleksandrovich; SOFRONOV, Fedor Petrovich; GEYMAN, L.M., red.izd-va; LAVRENT'YEVA, L.G., tekhn. red.

[New developments in boring and blasting operations in asbestos open pit mines] Novoe v burovzryvnykh rabotakh na asbestovykh kar'erakh. Moskva, Gosgortekhizdat, 1963. 68 p. (MIRA 16:10)

(Asbestos mines and mining) (Blasting)

KATANOV, Boris Aleksandrovich; SAFOKHIN, Mikhail Samsonovich; KUTUZOV, B.N., kand. tekhn. nauk, retsenzent; LYUBIMOV, N.G., otv. red.; OVSYANKO, V.G., tekhn. red.; MAKSIMOVA, V.V., tekhn.red.

[Handbook for drill operators] Spravochnik mashinista burovogo stanka. Moskva, Gosgortekhizdat, 1963. 200 p. (MIRA 16:6)
(Boring machinery)

KUTUZOV, B.N., kand. tekhn. nauk; RUBTSOV, V.K.

Types of piece-size curves of blasted rock. Vzryv. delo no.53/10:118-123 '63. (MIRA 16:8)

1. Moskovskiy institut radioelektroniki i gornoy elektromekhaniki (for Kutuzov). 2. Proizvodstvenno-eksperimental'noye upravleniye Soyuzvzryuproma (for Rubtsov).
(Blasting)

SUKHANOV, A.F., doktor tekhn.nauk; KAZAKOV, P.P., kand.tekhn.nauk; KUZNZOV, B.N., kand.tekhn.nauk; BOBRYSHEV, A.A., inzh.; MAKARKVICH, D.N., inzh.; TOKAR', M.G., inzh.

New ways of drilling holes in mines of the asbestos industry. Shakht. stroi. 7 no.4:13-15 Ap '63. (MIRA 16:3)

1. Moskovskiy institut radioelektroniki i gornoy elektromekhaniki.

SUKHANOV, A.F., prof.; NAZAROV, P.P., dotsent; KUTUZOV, B.N., kand. tekhn. nauk

Technical and economic indices for roller bit drilling of boreholes in U.S.S.R. strip mines. Nauch. trudy Mosk. inst. radioelek. i gor. elektromekh. no.47:5-19 '63.
(MIRA 17:6)

SUKHANOV, A.F., prof.; NAZAROV, P.P., dotsent; KUTUZOV, B.N., kand. tekhn. nauk; MAKAREVICH, D.N., gorn. inzh.; TOKAR', M.G., gorn. inzh.

Investigation of combination drilling of boreholes in strip mines. Nauch. trudy Mosk. inst. radioelek. i gor. elektromekh. no.47:20-35 '63. (MIRA 17:6)

SUKHANOV, A.F., prof.; KUTUZOV, B.N., kand. tekhn. nauk; TOKAR', M.G., inzh.; KANTOVICH, L.I., inzh.; KRASNOPOL'SKIY, A.A.; KACHURA, N.I.

Study of new methods of drilling holes in open-pit mines of the Dokuchayevsk flux-dolomite combine. Gor. zhur. no.7: 24-29 Jl '63. (MIRA 16:8)

1. Moskovskiy institut radioelektroniki i gornoy elektromekhaniki (for Sukhanov, Kutuzov, Tokar', Kantovich). 2. Glavnyy inzh. Dokuchayevskogo flyuso-dolomitnogo kombinata (for Krasnopol'skiy). 3. Glavnyy mekhanik Dokuchayevskogo flyuso-dolomitnogo kombinata (for Kachura).

SUKHANOV, Afanasiy Filimonovich; KUTUZOV, Boris Nikolayevich

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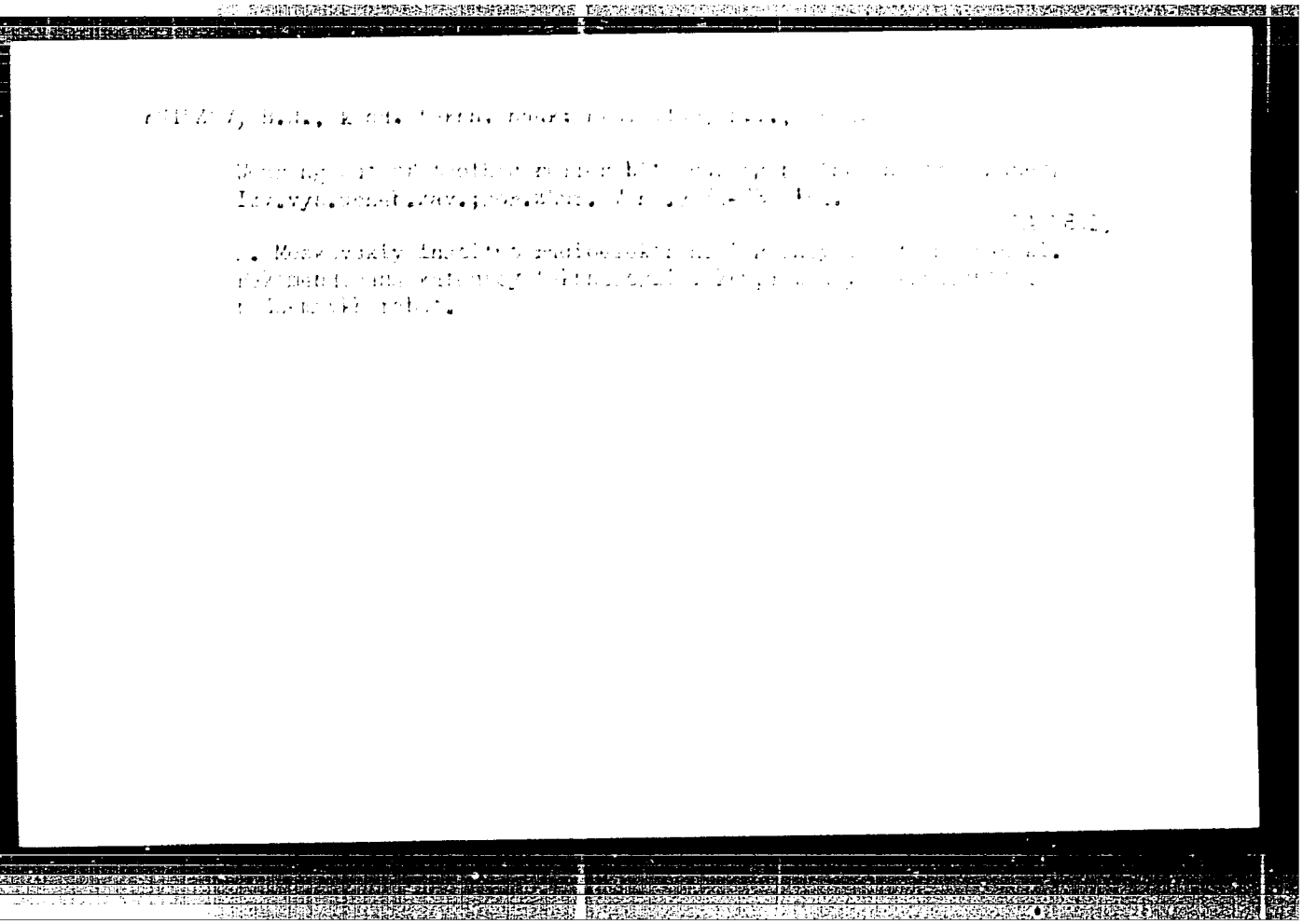

SUKHANOV, A.F., prof.; KUTUZOV, B.N., dotsent

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(MIRA 18:1)

1. Moskovskiy institut radioelektroniki i gornoy elektromekhaniki. Rekomendovana kafedroy tekhnologii i kompleksnoy mekhanizatsii podzemnoy dobychi rud i nerudnykh iskopayemykh.

KUTUZOV, B.N., kand. tekhn. nauk; KRASNOPOL'SKIY, A.A., inzh.; KACHUR, N.I., inzh.; MIKHEYEV, I.G., inzh.

Dust trapping by compressed air removal of drilling fines from boreholes. Bezop. truda v prom. 8 no.11:46-47 N '64.
(MIRA 18:2)

KOKHANOV, A.F., mekhanik-tekhnolog; [illegible], mekhanik-tekhnolog; [illegible], L.I., gornyy inzh.; [illegible], A.V., gornyy inzh.

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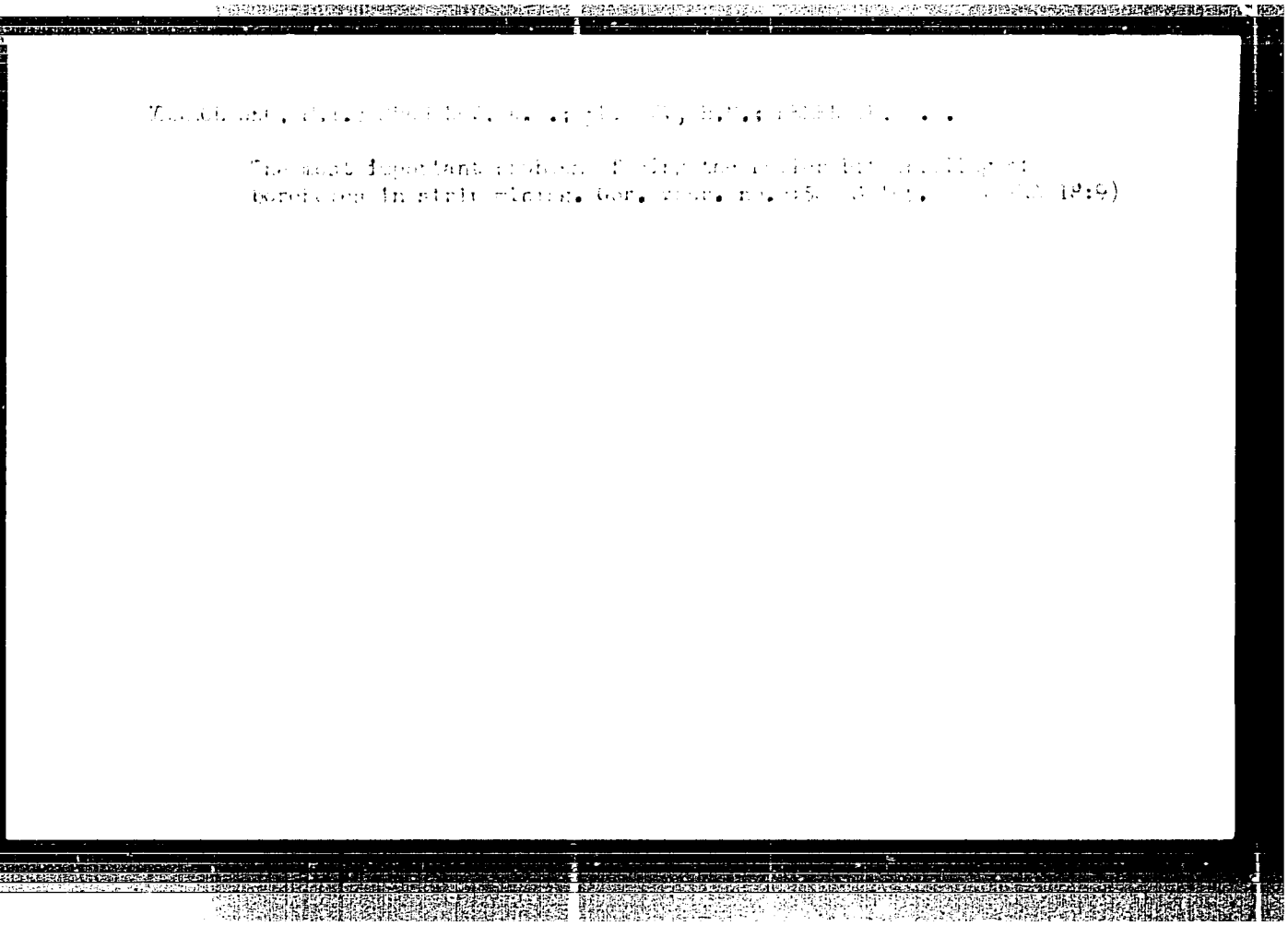

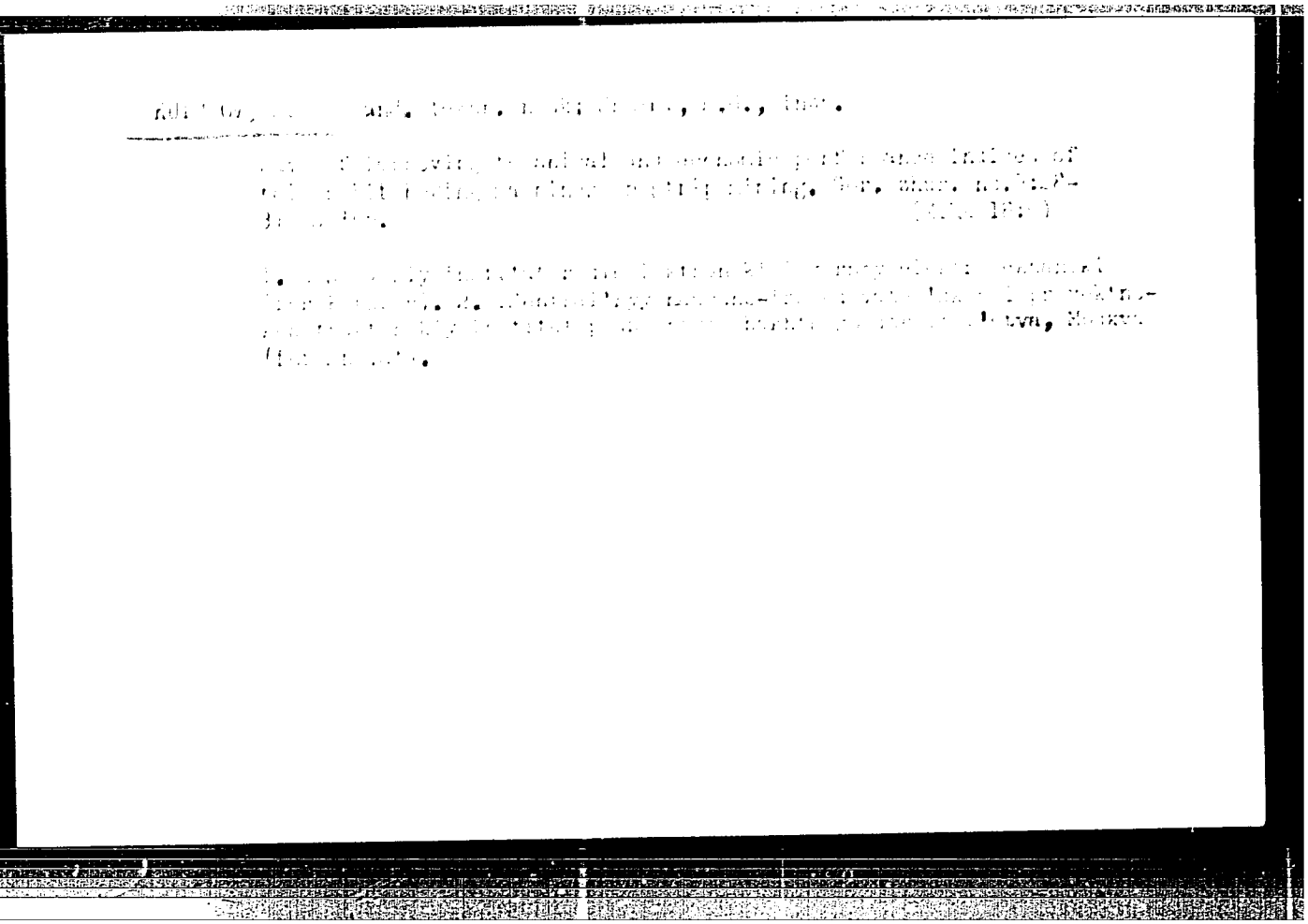

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